

**PEGRUM LECTURE SERIES  
DEPARTMENT OF GEOLOGY**

University at Buffalo  
Presents

**David L. Rudolph, Ph.D., PE**  
NGWA 2013 Distinguished Darcy Lecturer

**Managing Groundwater Beneath the  
Agricultural Landscape**

Date: Tuesday, February 19<sup>th</sup>, 2013  
Time: 3:30 Refreshments, 3:45 Lecture  
Place: 218 Natural Sciences Complex

Attend Dr. David L. Rudolph’s 2013 Darcy Lecture presentation and gain insight on how the nature of groundwater quality has been impacted from agricultural land-use practices, at both local and regional scales, with a specific focus on nitrate and microbial indicator species.

Agricultural land use represents the largest nonpoint source threat to groundwater quality on a global scale. As a result of decades of fertilizer application and surface spreading of animal manure, chronic increases in nutrient concentrations have been documented in both private and municipal well systems. The occurrence of pathogenic microbes in groundwater supply wells has also been associated with agricultural practices at the land surface. Beneficial management practices (BMPs) designed to reduce the risk of groundwater quality impacts in agricultural environments are being implemented worldwide, yet very little data are available to assess the performance of these BMPs.

The complexities associated with variable mass loading to the water table will be explored, considering regional recharge distributions. The role of the vadose zone in controlling subsurface redistribution, and as an archive of past land-use activities, will also be considered relative to the legacy of agricultural impacts on groundwater quality. The performance of a regional-scale BMP program designed to reduce nutrient loading to the subsurface in the vicinity of an impacted municipal groundwater supply system will be evaluated based on more than a decade of field monitoring evidence. The utility of a targeted in situ denitrification approach designed as a remedial strategy to temporarily augment the BMP program in the vicinity of the municipal wells will be addressed based on the results of field experiments.

Finally, the potential influence of extreme climatic variability on the mobility of nutrients and microbial species in agricultural environments will be explored relative to aquifer and well vulnerability.

*The Pegrum Lecture Series was established to honor Reginald H. Pegrum, founder of UB’s Geology Department.  
This series is funded in part by the Maurice Crook and Orrin Foster Lecture funds.*

Filename: Rudolph Flyer.doc  
Directory: C:\Users\Mark.Saunders\Documents  
Template: C:\Users\Mark.Saunders\AppData\Roaming\Microsoft\Templates\  
Normal.dotm  
Title: PEGRUM LECTURE SERIES  
Subject:  
Author: Alison A. Lagowski  
Keywords:  
Comments:  
Creation Date: 2/13/2013 10:53:00 AM  
Change Number: 2  
Last Saved On: 2/13/2013 10:53:00 AM  
Last Saved By: Chris Lowry  
Total Editing Time: 0 Minutes  
Last Printed On: 2/14/2013 7:39:00 AM  
As of Last Complete Printing  
Number of Pages: 1  
Number of Words: 374 (approx.)  
Number of Characters: 2,137 (approx.)